

Appl. No. 10/710,934
Amdt. dated March 08, 2006
Reply to Office action of December 12, 2005

Amendments to the Claims:

1. (currently amended) A phase locked loop (PLL) system for generating an output
signal according to a first reference signal, the output signal being used as a reference
5 clock to write recording data on an optical medium, the PLL system comprising:
a clock generator receiving the first reference signal and a first frequency-divided
signal to generate the output signal according to a phase difference between the
first reference signal and the first frequency-divided signal;
a phase-shift detector generating a phase adjusting signal corresponding to a phase
10 difference between the output signal and the first reference signal; and
a phase-controllable frequency divider connected to the clock generator and the
phase-shift detector for dividing the frequency of the output signal by a
frequency dividing ratio to generate the first frequency-divided signal and for
receiving the phase adjusting signal to adjust ~~the phase~~ the phase of the first
15 frequency-divided signal;

wherein the phase-controllable frequency divider adjusts the frequency dividing ratio
according to the phase adjusting signal.

- 20 2. (cancelled)

3. (currently amended) The PLL system of claim 1 wherein the phase-controllable
frequency divider comprises a counter for counting the ~~output signal~~ output signal, and
the phase-controllable frequency divider generates the first frequency-divided signal
25 according to the count value.

4. (original) The PLL system of claim 3 wherein the phase-controllable frequency

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divider adjusts the count value according to the phase adjusting signal.

5. (original) The PLL system of claim 1 wherein the first reference signal is a wobble signal generated from the optical medium.

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6. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:
a frequency divider dividing the output signal to generate a second frequency-divided signal; and
a phase difference detector connected to the frequency divider for detecting a phase
10 difference between the second frequency-divided signal and the wobble signal to generate the phase adjusting signal.

7. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:

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- a first frequency divider dividing the output signal to generate a second frequency-divided signal;
a second frequency divider dividing the wobble signal to generate a third frequency-divided signal; and
a phase difference detector connected to the first and second frequency dividers for
20 detecting a phase difference between the second frequency-divided signal and the third frequency-divided signal to generate the phase adjusting signal.

8. (original) The PLL system of claim 5 wherein the phase-shift detector detects a phase difference between the wobble signal and a recording synchronization signal
25 synchronous to the recording data for generating the phase adjusting signal.

9. (original) The PLL system of claim 5 wherein the optical medium is a DVD-R/RW disk.

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10. (original) The PLL system of claim 5 wherein the optical medium is a DVD+R/RW disk.
- 5 11. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:
a frequency divider dividing the wobble signal to generate a second
frequency-divided signal; and
a phase difference detector connected to the frequency divider for detecting a phase
10 difference between the second frequency-divided signal and a recording
synchronization signal synchronous to the recording data to generate the phase
adjusting signal.
12. (original) The PLL system of claim 5 wherein the optical medium is a DVD+R/RW
disk, and the phase-shift detector comprises:
15 an ADIP sync detector generating an ADIP synchronization signal synchronous to
the ADIP units of the optical medium;
a frequency divider for dividing the output signal to generate a second
frequency-divided signal; and
a phase difference detector connected to the frequency divider and the ADIP sync
20 detector for detecting a phase difference between the second frequency-divided
signal and the ADIP synchronization signal to generate the phase adjusting
signal.
13. (original) The PLL system of claim 5 wherein the optical medium is a DVD+R/RW
25 disk, and the phase-shift detector comprises:
an ADIP sync detector generating an ADIP synchronization signal synchronous to
the ADIP units of the optical medium; and
a phase difference detector connected to the ADIP sync detector for detecting a phase

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difference between the ADIP synchronization signal and a recording
synchronization signal synchronous to the recording data to generate the phase
adjusting signal.

- 5 14. (original) The PLL system of claim 5 wherein the optical medium is a DVD-R/RW
disk, and the phase-shift detector comprises:
a land-pre-pit (LPP) sync detector detecting LPP bits to generate an LPP
synchronization signal;
a frequency divider dividing the output signal to generate a second frequency-divided
10 signal; and
a phase difference detector connected to the frequency divider and the LPP sync
detector for detecting a phase difference between the second frequency-divided signal and
the LPP synchronization signal to generate the phase adjusting signal.
- 15 15. (original) The PLL system of claim 5 wherein the optical medium is a DVD-R/RW
disk, and the phase-shift detector comprises:
a land-pre-pit (LPP) sync detector detecting LPP bits to generate an LPP
synchronization signal; and
a phase difference detector connected to the LPP sync detector for detecting a phase
20 difference between the LPP synchronization signal and a recording
synchronization signal synchronous to the recording data to generate the phase
adjusting signal.
- 25 16. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:
a physical address detector detecting a physical address on the optical medium; and
a position difference detector for detecting a position difference between the physical
address and a logical address of the recording data to generate the phase adjusting
signal.

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17. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:
a physical address detector detecting a physical address on the optical medium;
a logic address detector detecting a logical address of the recorded data on the optical
5 medium; and
a position difference detector for detecting a position difference between the physical
address and the logical address of the recorded data to generate the phase adjusting
signal.
- 10 18. (currently amended) A method for generating an output signal according to a first
reference signal, the output signal being used as a reference clock to write recording
data on an optical medium, the method comprising:
receiving the first reference signal and a first frequency-divided signal to generate the
output signal according to a phase difference between the first reference signal
15 and the first frequency-divided signal;
generating a phase adjusting signal corresponding to a phase difference between the
output signal and the first reference signal;
dividing the frequency of the output signal ~~by~~ by a frequency dividing ratio to
generate the first frequency-divided signal; and
20 receiving the phase adjusting signal to adjust ~~the phase~~ the phase of the first
frequency-divided signal; ~~and~~
adjusting the frequency dividing ratio according to the phase adjusting signal.
19. (cancelled)
- 25 20. (original) The method of claim 18 further comprising:
counting the output signal to generate a count value, and generating the first
frequency-divided signal according to the count value.

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21. (original) The method of claim 20 further comprising:
adjusting the count value according to the phase adjusting signal.
- 5 22. (original) The method of claim 18 wherein the first reference signal is a wobble signal generated from the optical medium.
23. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:
10 dividing the output signal to generate a second frequency-divided signal; and
detecting a phase difference between the second frequency-divided signal and the wobble signal to generate the phase adjusting signal.
- 15 24. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:
dividing the output signal to generate a second frequency-divided signal;
dividing the wobble signal to generate a third frequency-divided signal; and
detecting a phase difference between the second frequency-divided signal and the
third frequency-divided signal to generate the phase adjusting signal.
- 20 25. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:
detecting a phase difference between the wobble signal and a recording
synchronization signal synchronous to the recording data for generating the
25 phase adjusting signal.
26. (original) The method of claim 22 wherein the optical medium is a DVD-R/RW disk.

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27. (original) The method of claim 22 wherein the optical medium is a DVD+R/RW disk.
28. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:
- 5 dividing the wobble signal to generate a second frequency-divided signal; and
 detecting a phase difference between the second frequency-divided signal and a
 recording synchronization signal synchronous to the recording data for
 generating the phase adjusting signal.
- 10 29. (original) The method of claim 22 wherein the optical medium is a DVD+R/RW disk,
 and generating the phase adjusting signal comprises:
 generating an ADIP synchronization signal synchronous to the ADIP units of the
 optical medium;
 dividing the output signal to generate a second frequency-divided signal; and
15 detecting a phase difference between the second frequency-divided signal and the
 ADIP synchronization signal to generate the phase adjusting signal.
30. (original) The method of claim 22 wherein the optical medium is a DVD+R/RW disk,
 and generating the phase adjusting signal comprises:
- 20 generating an ADIP synchronization signal synchronous to the ADIP units of the
 optical medium; and
 detecting a phase difference between the ADIP synchronization signal and a recording
 synchronization signal synchronous to the recording data to generate the phase
 adjusting signal.
- 25 31. (original) The method of claim 22 wherein the optical medium is a DVD-R/RW disk,
 and generating the phase adjusting signal comprises:
 detecting LPP bits to generate an LPP synchronization signal;

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dividing the output signal to generate a second frequency-divided signal; and
detecting a phase difference between the second frequency-divided signal and the LPP
synchronization signal to generate the phase adjusting signal.

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32. (original) The method of claim 22 wherein the optical medium is a DVD-R/RW disk,
and generating the phase adjusting signal comprises:
detecting LPP bits to generate an LPP synchronization signal; and
detecting a phase difference between the LPP synchronization signal and a recording
10 synchronization signal synchronous to the recording data for generating the
phase adjusting signal.

33. (original) The method of claim 22 wherein generating the phase adjusting signal
comprises:

15 detecting a physical address on the optical medium; and
detecting a position difference between the physical address and a logical address of
the recording data to generate the phase adjusting signal.

34. (original) The method of claim 22 wherein generating the phase adjusting signal
comprises:

20 detecting a physical address on the optical medium;
detecting a logical address of the recorded data on the optical medium; and
detecting a position difference between the physical address and a logical address of
the recorded data to generate the phase adjusting signal.

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